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January 28, 2015

Via Hand Delivery

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: *Ex parte* letter – GN Docket No. 14-28

Dear Ms. Dortch:

As the Commission considers adopting important safeguards to protect consumers' enjoyment of an open Internet, I am writing on behalf of the technology company Adaptive Spectrum and Signal Alignment, Inc. ("ASSIA") to urge the Commission to include in its final Order consumer-friendly online tools that consumers can use to ensure that broadband providers adhere to the Commission's new rules.

ASSIA, founded by John Cioffi, develops software for managing broadband networks and residential Wi-Fi networks. Dr. Cioffi, known as the "Father of DSL," is an electrical engineer and engineering professor whose trailblazing research was instrumental in making DSL technology widely available. He has published more than 400 papers and holds more than 100 patents. Dr. Cioffi is a member of the United States National Academy of Engineering and has been awarded the Economist Computing and Telecommunications Award (2010), the IEEE Alexander Graham Bell Medal (2010), the IEEE Kobayashi Award (2001), and the Marconi Society's Marconi Prize (2006).

ASSIA's Cloudcheck Internet diagnostic and optimization application, which is available today for use on Apple and Android devices, can serve as an essential tool in enforcing the Commission's contemplated non-discrimination requirements. The Cloudcheck application measures and monitors broadband speeds and throughput, and it can report to consumers and other interested parties information about the performance of consumers' internet connectivity. It also identifies the source of connectivity bottlenecks.

Specifically, the Cloudcheck application provides consumers with three measurements to assess Internet speed: download speed from a relevant content gateway, broadband/fixed-line speed, and wireless speed. By providing three measurements—as opposed to just one, as most other Internet speed-measuring applications do—Cloudcheck enables users to identify which portion of the connection is the slowest and therefore likely acting as the bottleneck in the user's

connectivity experience. Moreover, ASSIA has begun to accumulate a statistical database of Cloudcheck tests results covering time, geography, content provider, and service provider that can in turn be used to determine whether connectivity problems arise from network traffic congestion issues or active service provider throttling. A consumer will then be able to compare his or her own experience with those of other consumers similarly situated. For further details on how Cloudcheck functions and its advantages relative to similar technologies, see Attachment A.

If consumers have tools that help them confirm that ISPs are continuously providing the promised bandwidth for which they have contracted and paid, consumers will be better positioned to resolve Internet connectivity problems independently, rapidly, and at lower overall cost. The Commission should seek to empower consumers with tools like Cloudcheck to identify Internet service problems themselves and perhaps even work those problems out with ISPs directly. If the right resources are made available, many issues between consumers and ISPs likely would be resolved without appeal to the Commission's formal complaint procedures, and the time and expense that requires. For that reason, we urge the Commission in its upcoming order to make explicit that tools exist for consumers to confirm that their ISPs continuously provide the promised bandwidth that consumers have purchased.

Alerting consumers to how they can help ensure that the Commission's rules are followed falls clearly within the Commission's authority. In its May 15, 2014 Notice of Proposed Rulemaking ("NPRM"), the Commission sought comment on how to enforce the rules it is considering adopting. With regard to the transparency rule, the NPRM sought comment on how the Commission could "best design a process for enforcing the transparency rule that provides certainty, flexibility, and access for all affected parties";¹ the NPRM also asked about "the most effective methods to ensure ongoing compliance with the transparency rule."² The NPRM further sought comment on "any other suggestions commenters may deem relevant, to ensure full compliance with the transparency rule"³ The NPRM showed particular concern for consumers' and end users' participation in the enforcement process.⁴

In response to the NPRM, several commenters raised concerns that stressed the importance of increasing consumers' knowledge of ISP performance. For instance, Stanford Law School Professor Barbara van Schewick, whose work the Commission cited heavily in the

¹ *In the Matter of Protecting and Promoting the Open Internet*, Notice of Proposed Rulemaking, 29 FCC Rcd. 5561, GN Docket No. 14-28, para. 87 (May 15, 2014).

² *See id.*

³ *See id.* at para. 88.

⁴ In discussing elements necessary to an effective institutional design for the proposed rules, the NPRM noted that there must be effective access to dispute resolution by end users. *See id.* at para. 163. In discussing the importance of a legal standard, the NPRM identified end users as among those for whom a legal standard can provide a metric for assessing broadband provider conduct. *See id.* at para. 165. And in discussing potential complaint processes, the NPRM asked whether there are ways the Commission can improve its informal complaint process to make it easier to access and more effective, especially for consumers. *See id.* at para. 172.

NPRM,⁵ has noted that because an application's bad performance may be attributable to multiple causes, ranging from bad design to network congestion, users may not realize that their network provider is interfering with an application.⁶ Furthermore, she notes that even if users consider the possibility of network provider interference, many will lack the expertise to investigate the cause of the bad performance.⁷

The Electronic Frontier Foundation also commented on how end users may not know that their broadband provider is behaving in non-neutral ways.⁸ It emphasized that without adequate information, a customer experiencing a problem with her broadband service may not know which parties caused the problem.⁹ Along similar lines, Access noted that if an ISP's service does not meet a user's expectations, the user can do little to verify the source of the deficiency.¹⁰

Cloudcheck offers a solution to the concerns these commenters raise: it narrows the information gap by giving consumers the data they might otherwise lack to determine whether their ISP or some other source is the root of their connectivity problems. Cloudcheck thereby would help consumers confirm whether their ISPs are providing the promised bandwidth, which in turn, can help consumers determine whether their ISPs are violating the rules the Commission will shortly issue. On behalf of ASSIA, Reed Hundt discussed these issues with Matthew DelNero, Walter Johnston, and Scott Jordan and explained how this technology can be of great service to consumers and to the Commission's goal. Such determinations can be vital to the efficient and effective enforcement process the NPRM discussed.

A statement in the upcoming order that consumers should be able to confirm that ISPs continuously provide the promised bandwidth consumers have contracted and paid for is thus a concrete response to the enforcement concerns raised by the NPRM and, therefore, a logical outgrowth of it. Accordingly, we urge the Commission to make this point explicitly in the order.

⁵ See *id.* at notes 9, 89, 90, 91, 92, and 250.

⁶ See Barbara van Schewick, *Network Neutrality and Quality of Service: What a Non-Discrimination Rule Should Look Like*, 67 STAN. L. REV. (forthcoming Jan. 2015), *attachment to* Barbara van Schewick, Notice of Ex Parte Meeting, GN Docket No. 09-191, GN Docket No. 14-28 (Sept. 19, 2014).

⁷ See *id.* at 61.

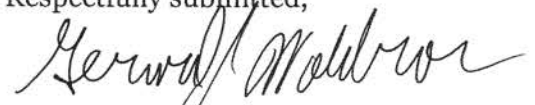
⁸ See Electronic Frontier Foundation Comments, GN Docket No. 14-28, 3 (July 15, 2014).

⁹ See *id.* at 26.

¹⁰ See Access, GN Docket No. 14-28, 15 (Jul. 15, 2014).

Please direct any questions to the undersigned.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Gerard J. Waldron". The signature is fluid and cursive, with the first name "Gerard" being more prominent.

Gerard J. Waldron
Ani Gevorkjan
Counsel to ASSIA

Attachment

cc: Matthew DelNero
Gigi Sohn
Daniel Alvarez
Rebekah Goodheart
Priscilla Delgado Argeris
Nicholas Degani
Amy Bender

ATTACHMENT A

ASSIA Cloudcheck® - A Comparison to Conventional Internet Speed Test Tools and a Proposal to the FCC

December 10, 2014

Chris Fisher, SVP Consumer Marketing
ASSIA, Inc
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Abstract

This note provides a comparison of ASSIA's Cloudcheck® internet diagnostic and optimization app/tool with more traditional "speed-test" type diagnostics. This comparison was requested at the conclusion of some late October meetings between ASSIA CEO J. Cioffi and John Leibovitz, special counsel to FCC chairman and others. Specifically illustrated are the advantages of Cloudcheck in assessing fair internet connectivity to different content/application sources. Cloudcheck's optional optimization of poorly performing connections is also mentioned. The action requested is that the FCC and ASSIA work to promote the use of Cloudcheck for better understanding of fair internet connectivity.

Introduction

Within the modern Internet economy various tools exist to help provide insight in to Internet connection performance. Generally speaking these tools are referred to as "Speed Tests." And these tests provide a variety of performance metrics (ping, latency, jitter, etc.) the most referenced and ubiquitous being the upload and download speed of an Internet connection. The most used tool by consumers is <http://www.speedtest.net> by Ookla/Ziff-Davis Publishing (<http://www.ookla.com>). Ookla provides a web browser based tool as well as variants of the tool for iOS and Android smart phones/tablets. Ookla also offers a "cobranded" version of their tool, which is used by Internet service providers such as AT&T, Comcast and even the FCC (offered as a "mobile broadband measurement tool" called "FCC Speed Test" as part of the Measuring Broadband America initiative). In addition to Ookla's Speed Test product there are similar web browser tools (some having mobile iOS and/or Android extensions) including:

Testmy.net
Speedof.me
Myspeed.visualware.com
Bandwidthplace.com
Ping-test.com

The Competition

The current landscape of speed test tools listed above allows users to test a single device connection (a PC/laptop, iPhone/iPad, Android smart phone/tablet) to a nearest geographical test server node typically within the users Internet service provider. These tools primarily report a single upload and download speed and some of the tools also provide comparative metrics for alternate service providers, speeds of alternate users within a similar geography, at similar times, etc. all of which attempt to help the user understand how their results compare to others and other networks.

The ASSIA Cloudcheck “Speed Test”

ASSIA’s Cloudcheck product was born from a desire to tell the consumer user where the “bottle neck”/slowest link in their connection is and then where possible offer the user a “fix”/improvement. The conventional speed test metrics while marginally useful don’t tell the user specifically what is going on with the segments of their internet connectivity experience nor are they related to connectivity elements beyond the service provider network, e.g. peering networks, content CDN’s, etc., all of which are relevant to a user experience that is highly contextual.

In this context Cloudcheck provides the consumer with three speed measurements:

1. Their download speed from a relevant (defined by the user inputting a specific URL) content site
2. Their broadband/fixed line speed (upload and download to multiple Cloudcheck owned out of service provider network test servers around the world)
3. Their wireless speed (either Wi-Fi or mobile 3G/4G/LTE depending upon the physical connection during the session)

Figure #1 compares the mobile app speed test results for ASSIA’s Cloudcheck to Ookla’s Speedtest

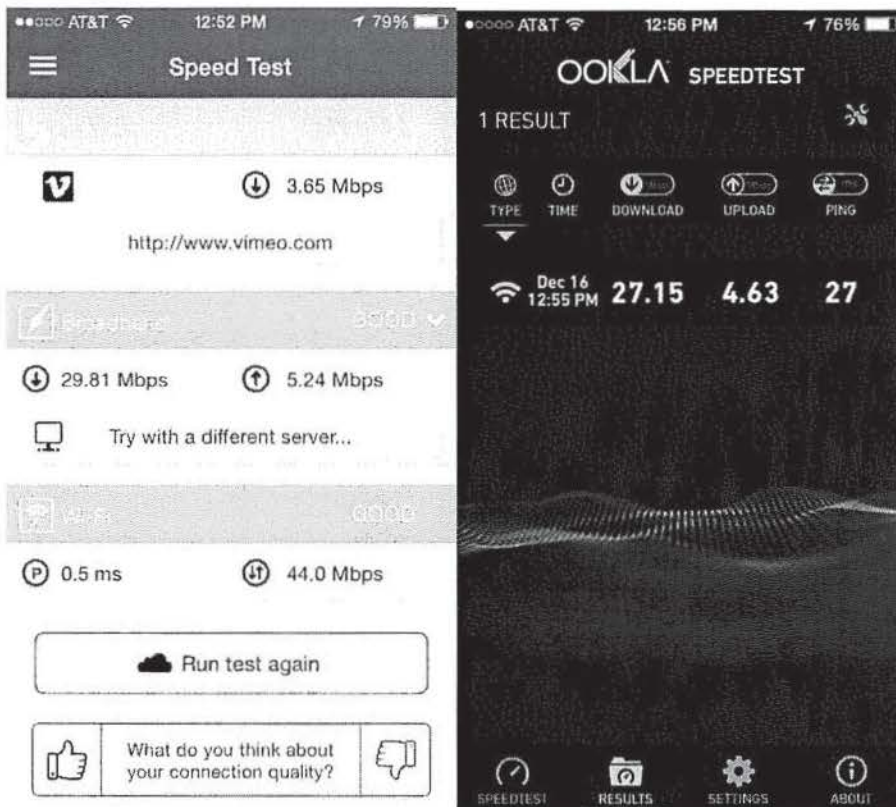


Figure #1 – Cloudcheck and SpeedTest mobile test results

By having each of these three relevant measurements the user can now assess which of the connection segments is slowest and thus acting as the “bottle neck” in their connectivity experience.

In addition to these test results Cloudcheck also offers the user monitoring and optimization services for fixed line xDSL, in home Wi-Fi and mobile Wi-Fi/3G/4G/LTE connections. In those situations where throughput performance can be improved and when Cloudcheck enabled hardware is present the user is given the option to opt in to monitoring/optimization services which from the cloud monitors 24 x 7 x 365 the user’s home Wi-Fi router, xDSL and/or mobile Wi-Fi/3G/4G/LTE connection and continuously optimizes to insure maximal connectivity performance.

A Tool For Determining Net Neutrality

Cloudcheck’s Broadband Test results combined with Content Test results can be used to infer service provider net neutrality violations. By encouraging users to install and use the Cloudcheck tool ASSIA can accumulate a statistical database of test results over time, geography, content provider and service provider that will allow reports to be provided to interested parties that would indicate either network traffic congestion issues or active service provider throttling and hence net neutrality violations.

As an example of the network neutrality reporting and analysis Cloudcheck can measure and report Figure #2 shows a Cloudcheck user in the San Francisco Bay Area. This user ran tests every hour on the hour for a period of 14 days. The download speed data in Figure #2 shows the average (over 14 days) test results of the Cloudcheck broadband measurement (orange) connected to the Cloudcheck Santa Clara CA test node server, the content measurement to the www.amazon.com west coast CDN (blue) and a comparative measurement using Ookla's speedtest.net tool (red). The service provider in this example is Comcast and between the hours of 5PM and 11PM PT speed performance rapidly diminishes and by as much as 40% at 9PMPT.

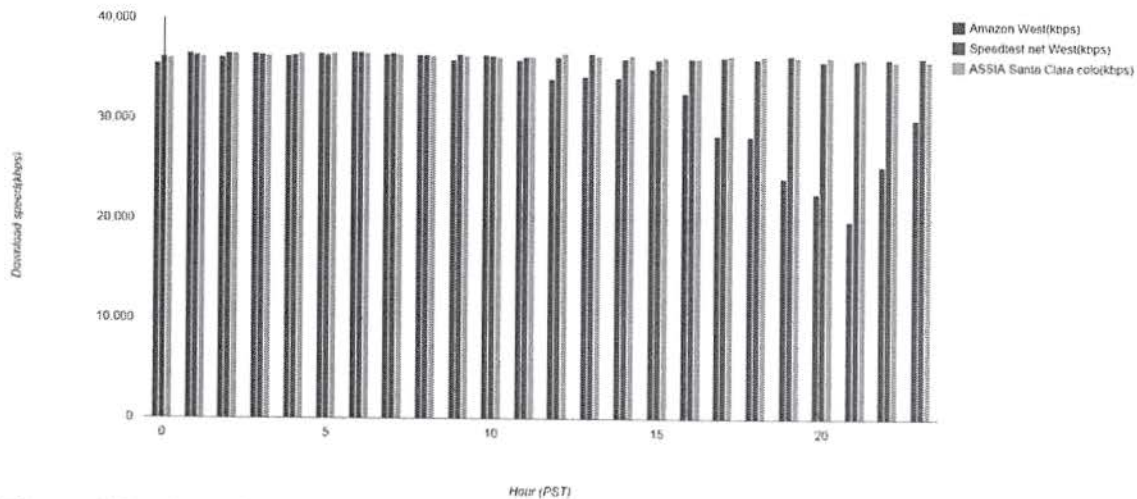


Figure #2 – Actual Cloudcheck Test Results on Comcast from Nov 1, 2014 to Nov 15, 2014

The identical test was run by another Cloudcheck user in the same city/state but this time connected to AT&T/U-Verse and the results were as shown in Figure #3.

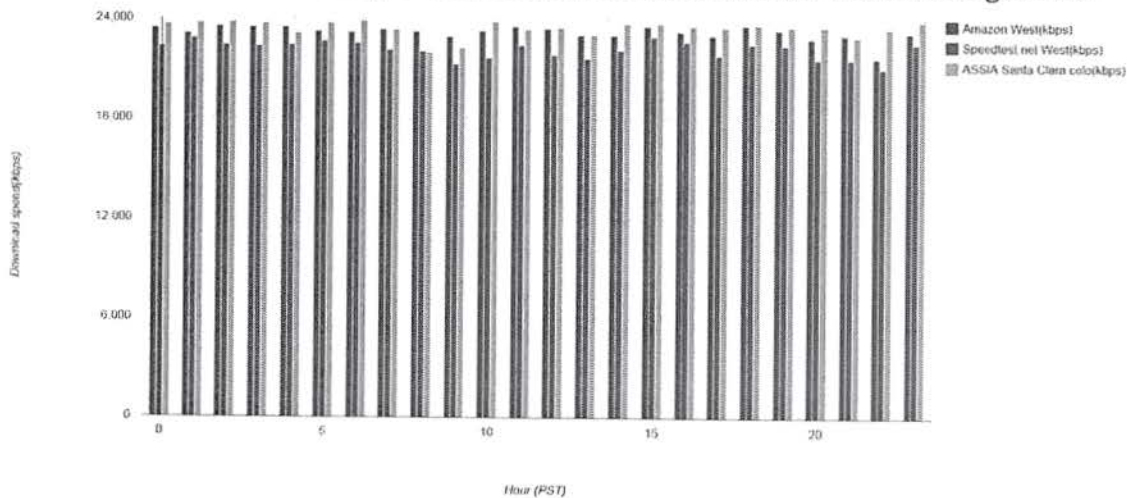


Figure #3 - Actual Cloudcheck Test Results on AT&T/U-Verse from Nov 1, 2014 to Nov 15, 2014

The results of these two graphs suggest that Comcast may be actively throttling traffic from www.amazon.com to San Francisco Bay Area subscribers during the hours of 5PM to 11PM PT while AT&T/U-Verse is not.

Summary and Proposal

Cloudcheck is much more than conventional “speed test” utilities. As a trusted third party utility with no motivation to obfuscate or mislead consumers Cloudcheck provides a tool and service to measure, monitor, improve and report to consumers and other interested parties on the performance of their internet connectivity experience and ascertain where is the “bottle neck.” Additionally, with sufficient user test data, Cloudcheck can help determine if service providers are actively throttling a subscriber’s connectivity experience.

ASSIA would propose that the FCC actively promote ASSIA’s Cloudcheck utility to consumers as a trusted third party tool for Internet connectivity diagnostics, monitoring, and optimization and for determining net neutrality.